Ultrasound in Medicine & Biology

Author–Subject Index
Volume 9 (1983)

OL.
9
983

Compiled by

Michael Halliwell
Department of Medical Physics, Bristol General Hospital, Bristol B51654, England

PERGAMON PRESS

NEW YORK · OXFORD · TORONTO
SYDNEY · PARIS · FRANKFURT

ULTRASOUND IN MEDICINE AND BIOLOGY

WORLD FEDERATION FOR ULTRASOUND IN MEDICINE AND BIOLOGY

President: GEORGE KOSSOFF, *Sydney, Australia*
Vice-President: WILLIAM GARRETT, *Sydney, Australia*
Past-President: H. R. MULLER, *Basel, Switzerland*
President-Elect: HORACE THOMPSON, *Shreveport, U.S.A.*
Treasurer: BARRY GOLDBERG, *Philadelphia, U.S.A.*
Secretary: CHRISTOPHER HILL, *Sutton, England*
Editor of the Journal: DENIS WHITE, *Kingston, Canada*
Councillors: M. FUKUDA, *Sapporo, Japan*
H. G. TRIER, *Bonn, F.R. Germany*
FRANCIS WEILL, *Besançon, France*

AFFILIATED SOCIETIES

American Institute of Ultrasound in Medicine (AIUM), Michael K. Meinerz (Executive Director), 4405 E–W Highway, Suite 504, Washington, DC 20014, U.S.A.

Australian Society for Ultrasound in Medicine (ASUM), J. Jellins, Secretary, Box R 374, P.O. Royal Exchange, Sydney, NSW 2000, Australia

European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB), T. Nordshus, Department of Radiology, Rontgen-Barneklinik, Rikshospitalet, Oslo 1, Norway

Japan Society of Ultrasound in Medicine (JSUM), Dr. Y. Tsutsumi, Department of Neurosurgery. Tokyo Teishin Hospital 14-23, Fujimi 2-chome, Chiyoda-ku, Tokyo 102, Japan

Malaysian Society of Ultrasound in Medicine (MSUM), Dr. S. K. Ong, Secretary, N.S. Chinese Maternity Hospital and Medical Center, Jalan Templer, Seremban, Negri Sembilan, Malaysia

Sociedade Brasileira de Ultra-som em Medicina e Biologia (SUSEM), M. A. M. Pavani, Secretary, Praca Germania, 45–15° andar CEP 01456, São Paulo, Brazil

Societas Internationalis pro Diagnostica Ultrasonica in Ophthalmologia (SIDUO), B. L. Hodes, Secretary, Hershey Medical Center, 500 Univ. Drive, Hershey, PA 17033, U.S.A.

South African Medical Ultrasound Society (SAMUS), E. Goudie, Secretary, P.O. Box 6705, Johannesburg, South Africa

VOL.
9
198

Publishing, Advertising, and Subscription Offices: Pergamon Press Inc., Fairview Park, Elmsford, NY 10523, U.S.A.; or Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Published bimonthly. Membership rate (1984) for individual members of organizations affiliated with the World Federation for Ultrasound in Medicine and Biology: $40.00.

Annual institutional subscription rate (1984) for libraries, university departments, government laboratories, industrial and other multiple-reader institutions: $165.00.

Two-year institutional rate (1984/85): $313.50.

Non-member individual rate (1984) for those whose library subscribes at the institutional rate: $50.00. Microform subscriptions also available. Prices include surface postage and insurance. Airmail subscriptions extra.

Copyright © 1984 Pergamon Press Ltd.

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

Photocopying information for users in the U.S.A.: The Item-Fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law is paid. The appropriate remittance of $3.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 21 Congress Street, Salem, MA 01970. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying. In case of doubt please contact your nearest Pergamon office.

The Item-Fee Code for this publication is: 0301–5629/84 $3.00 + .00

Ultrasound in Medicine and Biology (ISSN 0301-5629) is published bimonthly by Pergamon Press. Application to mail at Second-Class rates pending at Elmsford, NY and additional mailing offices. POSTMASTER: Send address changes to: *Ultrasound in Medicine and Biology*, Pergamon Press, Fairview Park, Elmsford, NY 10523.

AUTHOR/SUBJECT INDEX

A

Abdominal fluid
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485

Abdominal scanning
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
transgastric ultrasonography of the pancreas (Lutz), 503

Absorption
temperature elevation in a beam of ultrasound (Nyborg), 611
ultrasonic attenuation and absorption in liver tissue (Parker), 363
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473

Acoustic damage
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the influence of ultrasound on embryonic development (Barnett), 19
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
ultrasonic effects on Dacus dorsalis (Hayes), 185
ultrasonic gas-body activation in Drosophila (Carstensen), 473
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

Acoustic diffraction
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283

Acoustic lenses
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33

Acoustic microstreaming
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
Alberda, A. Th., see Leerentveld, R. A.

Aliasing
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
Angelsen, B. A. J., Kristoffersen, K.: zerocrossing density for ultrasonic

Doppler signals obtained from computer simulations, 661
Angelsen, B. A. J., see Backe, B.

Annular array
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

Anomalous speckle movement
a motion artefact in real-time ultrasound scanners (Morrison), 201

Aortic flow
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641

Aortocoronary bypass
a biologically compatible implantable ultrasonic marker (Stern), 191

Aortoiliac disease
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271

Aperture, synthetic
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
Arditi, M., see Foster, F. S.

Array
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621

Artefact
a motion artefact in real-time ultrasound scanners (Morrison), 201

Arterial anastomoses
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79

Arterial flow
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265

VOL. 9 1983

post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occulsive disease (Johnston), 271
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Arteriography

flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Arteriosclerosis

limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Artery

an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641

ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Atheromatous plaques
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

APT
further investigations of APT release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297

Attenuation
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
ultrasonic attenuation and absorption in liver tissue (Parker), 363

Axial response
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33

Axicon
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

VOL. 9 1983

B

Backscatter
a biologically compatible implantable ultrasonic marker (Stern), 191
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283
Backe, B., Brodtkorb, C. J., Giltvedt, J., Kvernes, S., Brubakk, A. O., Torp, H., Angelsen, B. A. J.: fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array, 587
Bailey, K. I., O'Brien, Jr., W. D., Dunn, F.: ultrasonically induced morphological damage to mouse ovaries, 25
Baird, R. N., see Campbell, W. B.
Bandyk, D. F., Zierler, R. E., Berni, G. A., Thiele, B. L.: pulsed Doppler velocity patterns produced by arterial anastomoses, 79
Bandyk, D. F., see Zierler, R. E.
Barnes, R. W., see Rittgers, S. E.
Barnett, S. B.: the influence of ultrasound on embryonic development, 19
Bashiti, H. M., see Wolverson, M. K.

Beach, K. W., see Langlois, Y.
Beach, K. W., see Roederer, G. O.

Beam plots
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
ultrasonic attenuation and absorption in liver tissue (Parker), 363
ultrasonic effects on Dacus dorsalis (Hayes), 185
Belloir, A., see Weill, F.
Berg, R. B., Child, S. Z., Carstensen, E. L.: The influence of carrier frequency on the killing of drosophila larvae by microsecond pulses of ultrasound, L448
Berg, R. B., see Carstensen, E. L.
Berni, G. A., see Zierler, R. E.
Berni, G. A., see Bandyk, D. F.

Biological effects
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
observations of ultrasound-induced effects in the fish Xiphophorous maculatus (Martin), 177
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the influence of ultrasound on embryonic development (Barnett), 19
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic effects on Dacus dorsalis (Hayes), 185
ultrasonic gas-body activation in Drosophila (Carstensen), 473
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

Blood
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
the validity of the linear approximation in the parametric measurement of attenuation in tissues (Narayana), 357

Blood flow
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51

fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Body weight gain

the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
Bolondi, L., Gaiani, S., Casanova, P., Testa, S., Priori, P., Labo, G.: improvement of pancreatic ultrasound imaging after secretin administration, 497

Breast

breast imaging with a conical transducer annular array hybrid scanner (Foster), 151
Breslau, P., see Roederer, G. O.
Brodtkorb, C. J., see Backe, B.
Brubakk, A. O., see Backe, B.
Brun, Ph., see Weill, F.

Bubbles

further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473
Bush, N. L., Hill, C. R.: gelatine-alginate complex gel: a new acoustically tissue-equivalent material, 479
Butler, B. D.: Bubble filtration using arterial filters, L89

VOL.
9
1983

C

Cabrol, C., see Veyrat, C.

Calibration
a simple acoustically coupled calibrator (Martin), 395
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
Campbell, W. B., Baird, R. N., Cole, S. E. A., Evans, J. M., Skidmore, R., Woodcock, J. P.: physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease, 265

Capillary flow
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177

Cardiac output
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

Carotid artery
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599
Carstensen, E. L., Child, S. Z., Lam, S., Miller, D. L., Nyborg, W. L.: ultrasonic gas-body activation in *Drosophila*, 473
Carstensen, E. L., Berg, R. B. and Child, S. Z.: pulse average vs maximum intensity, L451
Carstensen, E. L., see Berg. R. B.
Carstensen, E. L., see Dooley, D. A.
Cartee, R. E., see Weigel, J. P.
Casanova, P., see Bolondi, L.

Cavitation
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177

subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic effects on *Dacus dorsalis* (Hayes), 185
ultrasonic gas-body activation in Drosophila (Carstensen), 473

Cellular growth
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

Cell lysis
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
Chan, A., see Langlois, Y.
Chan, A. T. W., see Roederer, G. O.

Characterisation
the validity of the linear approximation in the parametric measurement of attenuation in tissues (Narayana), 357
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue in vitro (Nicholas), 283
ultrasonic attenuation and absorption in liver tissue (Parker), 363
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Chick embryos
the influence of ultrasound on embryonic development (Barnett), 19
Chikos, P. M., see Langlois, Y.
Chikos, P. M., see Roederer, G. O.
Child, S. Z., see Carstensen, E. L.
Child, S. Z., see Berg, R. B.
Child, S. Z., see Carstensen, E. L.
Child, S. Z., see Dooley, D. A.
Chingon, H. T. G., see Hayes, C. F.
Church, C. C., Miller, M. W.: the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube, 385
Cobbold, R. S. C., see Douville, Y.
Cobbold, R. S. C., see Johnston, K. W.
Cole, S. E. A., see Campbell, W. B.

Color
review paper. Color display in ultrasonography (Pizer), 331

Computer diagnosis processing
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657

VOL. 9 1983

flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641

Computer simulation
zerocrossing density for ultrasonic Doppler signals obtained from computer simulations (Angelsen), 661

Contrast
review Paper. Color display in ultrasonography (Pizer), 331

Contrast angiography
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

CT
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485

CW Doppler
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
quantitative analysis of carotid artery Doppler spectral waveforms: physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271

D

Dacus dorsalis
ultrasonic effects on *Dacus Dorsalis* (Hayes), 185
Deaver, J., see Hayes, C. F.
Deschamps, J. P., see Didier, D.
Didier, D., Deschamps, J. P., Rohmer, P., Lassegue, A., Ottignon, Y., Weill, F.: evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects, 509

Digital image storage
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

Display
review Paper. Color display in ultrasonography (Pizer), 331

DNA
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

Dog
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
preliminary study on the use of ultrasonic transmission imaging to evaluate the hip joint in the immature dog (Weigel), 371
Dooley, D. A., Child, S. Z., Carstensen, E. L., Miller, M. W.: the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro*, 379

Doppler
a motion artefact in real-time ultrasound scanners (Morrison), 201
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
zerocrossing density for ultrasonic Doppler signals obtained from computer simulations (Angelsen), 661
Douville, Y., Johnston, K. W., Kassam, M., Zuech, P., Cobbold, R. S. C., Jares, A.: an *in vitro* model and its application for the study of carotid Doppler spectral broadening, 347

Drosophila melanogaster
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473
Dunn, F.: A brief provocative statement on ultrasound bioeffects, 95
Dunn, F., see Bailey, K. I.

Duplex scanning
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

VOL.
9
1983

flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73

E

Echocardiography
a biologically compatible implantable ultrasonic marker (Stern), 191
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
Edmonds, P. D., Sancier, K. M.: evidence for free radical production by ultrasonic cavitation in biological media, 635

Elastic scatter
a biologically compatible implantable ultrasonic marker (Stern), 191

Endarterectomy
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73

Endoscopic scanning
transgastric ultrasonography of the pancreas (Lutz), 503

ERCP
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509

Erythrocytes hemolysis
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297

ESR
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
Evans, J. M., see Campbell, W. B.

F

Fay, B.: high resolution ultrasonic imaging by controlled averaging of backscattered signals, 467

Femoral artery
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265

relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271

Femoral pressure

relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271

Fertilisation, in vitro

assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

Fetal distress

fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

Fetal flow

fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

Fetus

fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

Firefly-extract

further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297

First moment

computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657

Fish

observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177

Flow

an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

VOL. 9 1983

flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Fluid collections
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
Flynn, H. G.: The distribution of acoustic energy in the presence of cavitation, L447

Focusing
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
the construction and assessment of lenses for local treatment of malignant tumors by ultrasound (Hynynen), 33

Follicles
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

Follicular growth rate
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

Follicular size
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
Foster, F. S., Arditi, M., Patterson, M. S., Lee-Chahal, D., Hunt, J. W.: breast imaging with a conical transducer annular array hybrid scanner, 151

Fourier analysis
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641

Free radicals
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635

Frequency dependence
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357

Fruit fly
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
Fuller, M., see Hynynen, K.
Fuller, M., see Hynynen, K.

G

Gaiani, S., see Bolondi, L.

Gas bubbles
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic gas-body activation in Drosophila (Carstensen), 473
Gaudiani, V. A., see Stern, R. A.

Gaussian spectrum
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
zerocrossing density for ultrasonic Doppler signals obtained from computer simulations (Angelsen), 661

Gels
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
Gent, I., see Leerentveld, R. A.
Giltvedt, J., see Backe, B.

Graafian follicle
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
Green, S. E., see Stern, R. A.
Green Jr., F. M., see Phillips, D. J.

Grey Scale
review Paper. Color display in ultrasonography (Pizer), 331

H

ter Haar, G. R., see Morton, K. I.
Hatteland, K.: Authors reply to: bubble filtration using arterial filters, L90
Hayes, C. F., Chingon, H. T. G., McMurdo, M. B., Ikeda, M. B., Sanderson, S. L., Deaver, J.: ultrasonic effects on *Dacus dorsalis*, 185

HCG
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
Heyder, N., see Lutz, H.

VOL. 9 1983

Hick, P., see Merode, T.
Hill, B. C., see Stern, R. A.
Hill, C. R. see Bush, N. L.
Hill, C. R., see Morton, K. I.

Histology, image correlation
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599
Hoeks, A. P. G., see Merode, T.
Hsiao, H. S., see Lucas, C. L.
Hunt, J. W., see Foster, F. S.
Hynynen, K., Watmough, D. J., Mallard, J. R., Fuller, M.: local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration, 621
Hynynen, K., Watmough, D. J., Mallard, J. R., Fuller, M.: the construction and assessment of lenses for local treatment of malignant tumors by ultrasound, 33

Hyperthermia
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
temperature elevation in a beam of ultrasound (Nyborg), 611
the construction and assessment of lenses for local treatment of malignant tumors by ultrasound (Hynynen), 33
Hyun-kyung, Lee Kim, Picciano, M. F., O'Brien, Jr., W. D.: the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice, 165

I

Ikeda, M. B., see Hayes, C. F.

Imaging
a biologically compatible implantable ultrasonic marker (Stern), 191
a motion artefact in real-time ultrasound scanners (Morrison), 201
a simple acoustically coupled calibrator (Martin), 395
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509

fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
preliminary study on the use of ultrasonic transmission imaging to evaluate the hip joint in the immature dog (Weigel), 371
review Paper. Color display in ultrasonography (Pizer), 331
transgastric ultrasonography of the pancreas (Lutz), 503
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

In vitro *fertilisation*
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

In vitro *imaging*
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599
Ingels, Jr., N. B., see Stern, R. A.

Intraoperative ultrasound
intraoperative pulsed Doppler assessment of carotid endarterectomy (Zierler), 65
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79

Irradiation
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
temperature elevation in a beam of ultrasound (Nyborg), 611
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
the construction and assessment of lenses for local treatment of malignant tumors by ultrasound (Hynynen), 33

VOL. 9 1983

the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the influence of ultrasound on embryonic development (Barnett), 19
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic effects on *Dacus dorsalis* (Hayes), 185
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

J

Jares, A., see Douville, Y.
Johnston, K. W., Kassam, M., Cobbold, R. S. C.: relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease, 271
Johnston, K. W., see Douville, Y.

K

Kalmanson, D., see Veyrat, C.

Kappa
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
post-endarterectomy carotid ultrasonic duplex scanning: concondance with contrast angiography (Roederer), 73
Kassam, M., see Douville, Y.
Kassam, M., see Johnston, K. W.
Keagy, B. A., see Lucas, C. L.
Kristoffersen, K., see Angelsen, B. A. J.
Kvernes, S., see Backe, B.

L

Labo, G., see Bolondi, L.
Lam, S., see Carstensen, E. L.
Langlois, Y., Roederer, G. O., Chan, A., Phillips, D. J., Beach, K. W., Martin, D. W., Chikos, P. M., Strandness, Jr., D. E.: evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography, 51
Langlois, Y., see Phillips, D. J.
Langlois, Y., see Roederer, G. O.

Laparoscopic oocyte collection
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

Laparoscopy
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595

Laplace transform
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265

Larvae
ultrasonic effects on *Dacus dorsalis* (Hayes), 185
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473
Lassegue, A., see Didier, D.
Lee-Chahal, D., see Foster, F. S.
Leerentveld, R. A., Gent, I., Alberda, A. Th., Wladimiroff, J. W.: assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study, 595

Lenses
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33

Liver
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283
ultrasonic attenuation and absorption in liver tissue (Parker), 363

Liver cancer
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283
Lucas, C. L., Keagy, B. A., Hsiao, H. S., Wilcox, B. R.: software analysis of 20 MHz pulsed Doppler quadrature data, 641

Luminescence assay
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
Lutz, H., Lux, G., Heyder, N.: transgastric ultrasonography of the pancreas, 503
Lux, G., see Lutz, H.

Lysis
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629

M

Mallard, J. R., see Hynynen, K.
Manin, J. P., see Veyrat, C.
Marich, K. W., see Weigel, J. P.

Marker

a biologically compatible implantable ultrasonic marker (Stern), 191

VOL. 9 1983

Martin, C. J., Pratt, B. M., Watmough, D. J.: observations of ultrasound-induced effects in the fish *Xiphophorous maculatus*, 177
Martin, D. W., see Langlois, Y.
Martin, K.: a simple acoustically coupled calibrator, 395

Material parameters
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
ultrasonic attenuation and absorption in liver tissue (Parker), 363

Maternal flow
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

Mating
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-Kyung), 165
Maulik, D., see Saini, V. D.
McDicken, W. N., Morrison, D. C., Smith, D. S. A.: A moving tissue-equivalent phantom for ultrasonic real-time scanning and Doppler techniques, L455
McDicken, W. N., see Morrison, D. C.
McMurdo, M. B., see Hayes, C. F.
Merode, T., Hick, P., Hoeks, A. P. G., Reneman, R. S.: limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume, 581

Mice
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

Microbubbles
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473

Microstreaming
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177

Migration, fluid
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
Miller, D. L., Williams, A. R.: further investigations on air release from human erythrocytes exposed to ultrasonically activated gas-filled pores, 297
Miller, D. L., see Carstensen, E. L.

Miller, M. W., see Church, C. C.
Miller, M. W., see Dooley, D. A.

Mitral annulus
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1

Mitral stenosis
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1

Mitral valve
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1

Model
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
a simple acoustically coupled calibrator (Martin), 395
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
temperature elevation in a beam of ultrasound (Nyborg), 611

Morphological damage
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25
Morrison, D. C., McDicken, W. N., Smith, D. S. A.: a motion artefact in real-time ultrasound scanners, 201
Morrison, D. C., see McDicken, W. N.
Morton, K. I., ter Haar, G. R., Stratford, I. J., Hill, C. R.: subharmonic emission as an indicator of ultrasonically-induced biological damage, 629
Muller, H. R., Radue, E. W., Saia, A., Pallotti, C.: Doppler ultrasonic measurement of carotid flow, L91
Murie, J. A., see Sheldon, C. D.

N

Nanda, N. C., see Saini, V. D.
Narayana, P. A., Ophir, J.: the validity of the liner approximation in the parametric measurement of attenuation in tissues, 357
Nicholas, A. W., see Nicholas, D.
Nicholas, D., Nicholas, A. W.,: two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro*, 283
Nyborg, W. L., Steele, R. B.: temperature elevation in a beam of ultrasound, 611
Nyborg, W. L., see Carstensen, E. L.

O

O'Brien, Jr., W. D., see Bailey, K. I.
O'Brien, Jr., W. D., see Hyun-kyung, Lee Kim

Observer error
assessment of follicular development in clomiphene induced cycles by

VOL.
9
1983

means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73

Oles
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467

Oocyte collection
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
Ophir, J., see Narayana, P. A.
Ottingnon, Y., see Didier, D.

Ovaries
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

Overlapping beams
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621

P

Pallotti, C., see Muller, H. R.

Pancreas
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
transgastric ultrasonography of the pancreas (Lutz), 503

Pancreatic duct
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497

Pancreatic fluid
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485

Parametric methods
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
Parker, K. J.: ultrasonic attenuation and absorption in liver tissue, 363
Patterson, M. S., see Foster, F. S.

Perceived dynamic range
review Paper. Color display in ultrasonography (Pizer), 331
Peterson, G. J., see Wolverson, M. K.

Phantoms
a biologically compatible implantable ultrasonic marker (Stern), 191
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33

Phillips, D. J., Greene Jr., F. M., Langlois, Y., Roederer, G. O., Strandness Jr., D. E.: flow velocity patterns in the carotid bifurcations of young, presumed normal subjects, 39
Phillips, D. J., see Langlois, Y.
Phillips, D. J., see Roederer, G. O.
Picciano, M. F., see Hyun-kyung, Lee Kim

Pig
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
Pizer, S. M., Zimmerman, J. B.: review Paper. Color display in ultrasonography, 331

Placenta
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

Plaques
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599
Pratt, B. M., see Martin, C. J.

Pregnancy
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587

VOL.
9
1983

Pressure, arterial
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271
Priori, P., see Bolondi, L.

Protein restriction
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

Pseudocolour scales
review Paper. Color display in ultrasonography (Pizer), 331

Pulsatility index
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
relationship between Doppler pulsatility index and direct femoral pressure measurements in the diagnosis of aortoiliac occlusive disease (Johnston), 271

Pulse shape
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
the influence of ultrasound on embryonic development (Barnett), 19

Pulsed Doppler
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
intraoperative pulsed doppler assessment of carotid endarterectomy (Zierler), 65
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

PVDF
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

Q

Quin, R. O., see Sheldon, C. D.

Radicals
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
Radue, E. W., see Muller, H. R.

Real-time imaging
a biologically compatible implantable ultrasonic marker (Stern), 191
a motion artefact in real-time ultrasound scanners (Morrison), 201
a simple acoustically coupled calibrator (Martin), 395
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
preliminary study on the use of ultrasonic transmission imaging to evaluate the hip joint in the immature dog (Weigel), 371
transgastric ultrasonography of the pancreas (Lutz), 503
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Real-time post-processing
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255

Regurgitation
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
Reneman, R. S., see Merode, T.

Resolution
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
Rittgers, S. E., Thornhill, B. M., Barnes, R. W.: Quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters, 255

RMA
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165

ROC curves
relationship between Doppler pulsatility index and direct femoral pressure

VOL. 9 1983

measurements in the diagnosis of aortoiliac occulsive disease (Johnston), 271
review Paper. Color display in ultrasonography (Pizer), 331
Roederer, G. O., Langlois, Y., Chan, A. T. W., Breslau, P., Phillips, D. J., Beach, K. W., Chikos, P. M., Strandness, Jr., D. E.: post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography, 73
Roederer, G. O., see Langlois, Y.
Roederer, G. O., see Phillips, D. J.
Rohmer, P., see Didier, D.
[illegible]
Rohmer, P., see Weill, F.
Rosenzweig, M. S., see Saini, V. D.

S

Saia, A., see Muller, H. R.
Saini, V. D., Maulik, D., Nanda, N. C., Rosenzweig, M. S.: computerized evaluation of blood flow measurement indices using Doppler ultrasound, 657

Sample volume
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581

Sampling theorem
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
Sancier, K. M., see Edmonds, P. D.
Sanderson, S. L., see Hayes, C. F.

Scanning
a biologically compatible implantable ultrasonic marker (Stern), 191
a motion artefact in real-time ultrasound scanners (Morrison), 201
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
assessment of follicular development in clomiphene induced cycles by means of ultrasound and laparoscopy: a comparative study (Leerentveld), 595
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
improvement of pancreatic ultrasound ultrasound imaging after secretin administration (Bolondi), 497
migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases (Weill), 485
transgastric ultrasonography of the pancreas (Lutz), 503
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Scatter
a biologically compatible implantable ultrasonic marker (Stern), 191
a motion artefact in real-time ultrasound scanners (Morrison), 201
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283

high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479

Secretin
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
Sheldon, C. D., Murie, J. A., Quin, R. O.: ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis, 575

Sidelobes
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

Signal processing
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657
zerocrossing density for ultrasonic Doppler signals obtained from computer simulations (Angelsen), 661
Skidmore, R., see Campbell, W. B.
Smith, D. S. A., see McDicken, W. N.
Smith, D. S. A., see Morrison, D. C.

Speckle
a biologically compatible implantable ultrasonic marker (Stern), 191
a motion artefact in real-time ultrasound scanners (Morrison), 201
breast imaging with a conical transducer annular array hybrid scanner (Foster), 151

Spectral analysis
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
fetal and maternal aortic flow in two different maternal positions. An investigation with combined Doppler-velocimetry and ultrasonic multiple array (Backe), 587
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Spectral broadening
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347

VOL.
9
1983

evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575

Standing waves
the influence of ultrasound on embryonic development (Barnett), 19
Steele, R. B., see Nyborg, W. L.

Stenosis
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
Stern, R. A., Hill, B. C., Gaudiani, V. A., Green, S. E., Ingels, Jr., N. B.: a biologically compatible implantable ultrasonic marker, 191
Strandness, Jr., D. E., see Langlois, Y.
Strandness, Jr., D. E., see Phillips, D. J.
Strandness, Jr., D. E., see Roederer, G. O.
Stratford, I. J., See Morton, K. I.

Stroke
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51

Subharmonic emission
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635

Synthetic aperture
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467

T

Temperature rise
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
temperature elevation in a beam of ultrasound (Nyborg), 611
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379

Teratology
the influence of ultrasound on embryonic development (Barnett), 19
Testa, S., see Bolondi, L.

Therapy
observations of ultrasound-induced effects in the fish *Xiphophorous maculatus* (Martin), 177
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25
Thiele, B. L., see Bandyk, D. F.
Thiele, B. L., see Zierler, R. E.
Thornhill, B. M., see Rittgers, S. E.

Thymocytes
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
ultrasonic gas-body activation in Drosophila (Carstensen), 473

Time interval histogram (TIH)
zerocrossing density for ultrasonic Doppler Signals obtained from computer simulations (Angelsen), 661

Tissue characterisation
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357
ultrasonic attenuation and absorption in liver tissue (Parker), 363
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Tissue equivalent materials
a motion artefact in real-time ultrasound scanners (Morrison), 201
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush), 479
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
the validity of the liner approximation in the parametric measurement of attenuation in tissues (Narayana), 357

Tissue models
a motion artefact in real-time ultrasound scanners (Morrison), 201
gelatine-alginate complex gel: a new acoustically tissue-equivalent material (Bush, 479
high resolution ultrasonic imaging by controlled averaging of backscattered signals (Fay), 467

temperature elevation in a beam of ultrasound (Nyborg), 611
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
Todd, J. H.: the distribution of acoustic energy in the presence of cavitation, L447
Torp, H., see Backe, B.

VOL.
9
1983

Transducer
a simple acoustically coupled calibrator (Martin), 395
breast imaging with a conical trasnducer annular array hybrid scanner (Foster), 151
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
two-dimensional diffraction scanning of normal and cancerous human hepatic tissue *in vitro* (Nicholas), 283

Transgastric scanning
transgastric ultrasonography of the pancreas (Lutz), 503

Transmission imaging
preliminary study on the use of ultrasonic transmission imaging to evaluate the hip joint in the immature dog (Weigel), 371

U

Ulceration
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Ultrasonic endoscopy
transgastric ultrasonography of the pancreas (Lutz), 503

Ultrasonic exposure
evidence for free radical production by ultrasonic cavitation in biological media (Edmonds), 635
further investigations of ATP release from human erythrocytes exposed to ultrasonically activated gas-filled pores (Miller), 297
local hyperthermia induced by focussed and overlapping ultrasonic fields—an *in vivo* demonstration (Hynynen), 621
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
temperature elevation in a beam of ultrasound (Nyborg), 611
the combined effect of ultrasonic exposure and protein restriction on maternal and fetal mice (Hyun-kyung), 165
the construction and assessment of lenses for local treatment of malignant tumours by ultrasound (Hynynen), 33
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379
the influence of ultrasound on embryonic development (Barnett), 19
the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473
ultrasonically induced morphological damage to mouse ovaries (Bailey), 25

Ultrasound toxicity
subharmonic emission as an indicator of ultrasonically-induced biological damage (Morton), 629
the effects of continuous wave and pulsed ultrasound on rat thymocytes *in vitro* (Dooley), 379

the kinetics and mechanics of ultrasonically-induced cell lysis produced by non-trapped bubbles in a rotating culture tube (Church), 385
ultrasonic gas-body activation in *Drosophila* (Carstensen), 473

V

Vascular disease
anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique (Veyrat), 1
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
post-endarterectomy carotid ultrasonic duplex scanning: concordance with contrast angiography (Roederer), 73
quantitative analysis of carotid artery Doppler spectral waveforms: diagnostic value of parameters (Rittgers), 255
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner (Wolverson), 599

Velocity profiles
an *in vitro* model and its application for the study of carotid Doppler spectral broadening (Douville), 347
evaluating carotid artery disease. The concordance between pulsed Doppler/spectrum analysis and angiography (Langlois), 51
flow velocity patterns in the carotid bifurcations of young, presumed normal subjects (Phillips), 39
limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
pulsed Doppler velocity patterns produced by arterial anastomoses (Bandyk), 79
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
Veyrat, C., Villemot, J. P., Manin, J. P., Cabrol, C., Kalmanson, D.: anatomic and functional evaluation of pure and associated mitral stenoses using the echo-Doppler scanner technique, 1
Villemot, J. P., see Veyrat, C.

W

Watmough, D. J., see Hynynen, K.
Watmough, D. J., see Hynynen, K.
Watmough, D. J., see Martin, C. J.

Waveform analysis
computerized evaluation of blood flow measurement indices using Doppler ultrasound (Saini), 657

VOL. 9 1983

limitations of Doppler spectral broadening in the early detection of carotid artery disease due to the size of the sample volume (Merode), 581
physiological interpretation of Doppler shift waveforms: the femorodistal segment in combined disease (Campbell), 265
software analysis of 20 MHz pulsed Doppler quadrature data (Lucas), 641
ultrasonic Doppler spectral broadening in the diagnosis of internal carotid artery stenosis (Sheldon), 575
Weigel, J. P., Cartee, R. E., Marich, K. W.: preliminary study on the use of ultrasonic transmission imaging to evaluate the hip joint in the immature dog, 371
Weill, F., Brun, Ph., Rohmer, P., Belloir, A.: migrations of fluid of pancreatic origin. Ultrasonic and CT study of 28 cases, 485
Weill, F., see Didier, D.
Wilcox, B. R., see Lucas, C. L.
Williams, A. R., see Miller, D. L.

Wirsung duct
evaluation of the pancreatic duct: a reappraisal based on a retrospective correlative study by sonography and pancreatography in 117 normal and pathologic subjects (Didier), 509
improvement of pancreatic ultrasound imaging after secretin administration (Bolondi), 497
Wladimiroff, J. W., see Leerentveld, R. A.
Wolverson, M. K., Bashiti, H. M., Peterson, G. J.: ultrasonic tissue characterisation of atheromatous plaques using a high resolution real time scanner, 599
Woodcock, J. P., see Campbell, W. B.

X

Xiphophorous maculatus
observations of ultrasound-induced effects in the fish Xiphophorous maculatus (Martin), 177

Z

Zerocrossing density
zerocrossing density for ultrasonic Doppler signals obtained from computer simulations (Angelsen), 661
Zierler, R. E., Bandyk, D. F., Berni, G. A., Thiele, B. L.: intraoperative pulsed Doppler assessment of carotid endarterectomy, 65
Zierler, R. E., see Bandyk, D. F.
Zimmerman, J. B., see Pizer, S. M.
Zuech, P., see Douville, Y.